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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/047,244
Filing Date: January 14, 2002
Appellant(s): JUMPPANEN ET AL.

Richard J. Danyko
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/3/05.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

The amendment after final rejection filed on 3/3/05 has been entered.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues to be reviewed on appeal

The appellant's statement of the 'rejection on appeal' in the brief is correct.

(7) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Prior Art of Record

JP 06-227994	Masahiro Azuma	8-1994
JP 60-115699	Masahiro Kowaka	6-1988
US 3,714,033	Somekh et al	1-1973

Perry et al, "Chemical Engineer's Handbook", 6th Edition, (1984) pp.13.53 – 13.57.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-8, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP H6-227994 in view of JP 60-115699, Chemical Engineer's Handbook, Perry and Green, pages 13-53-13-57, and Somekh et al (US 3,714,033).

JP(994) discloses a process for separating essential oils comprising steam distillation (page 3, Para 0001) (Appellant has steam distillation or extraction as alternate but equivalent processes in claim 1) to a mixture containing essential oils and water, contacting with divinyl benzene polystyrene adsorbent or activated carbon (page 3, para 0001) and then desorbing the essential oils using a solvent that is more hydrophobic than the hydrophilic phase (para 0036-page 13 of English translation: hydrophilic phase is water, eluting solvent is acetone) as in instant claim 1 and 2. The water (hydrophilic phase) temperature is at 60° C (page 8, para 0020) as in instant claim 3; the hydrophobic absorbent is synthetic polymer – divinyl benzene cross-linked-polystyrene, activated carbon, etc, as in instant claim 4 and 5. (page 8: 0016,0017); material is Cyprus (page 3: claim 2) as in instant claim 6; Cyprus or yellow oils (page

11: 0030) as in instant claim 7; and the process is continuous as in instant claim 10 (page 11: 0029).

JP (994) is silent on recycling the hydrophilic solvent, water, as in claim 1 of the instant application. Recycling of solvent in extractive and steam distillation is a commonly used as taught in a standard textbook of Chemical Engineering, such as Chemical Engineer's Handbook, by Perry and Green, 6th edition (see pages 13-53 through13-57, and the figures), and by Somekh (033) (see figure and col 1 lines 58-60). It would be obvious to one of ordinary skill in the art at the time of invention to recycle the water used in the process. One of ordinary skill in the art at the time of invention would chose to recycle water in the process of JP (994) to recycle solvents in extraction and distillation processes for process economics as taught by the references.

JP (994) does not teach adsorption and elution from the same column as in claim 1 step (iv) or claim 8 – chromatographic separation. JP (699) teaches adsorbing in to a packed column and then eluting the essential oils from the same column using a solvent more hydrophilic (pages 5 and 6 of English translation). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of JP(699) in the teaching of JP(994) to elute the essential oils from the adsorption column to "selectively" recover (by chromatographic separation) the essential oils as taught by JP(699) (see 'Effects of Invention' on page 4).

Claim 11 adds the further limitation of 'plant material' as the source material for essential oils, which is taught by JP'994 – see abstract.

(10) Response to Argument

Issues Presented:

The issue presented in the argument is new, not presented before.

The issue raised and argued in Appellant's response to the first action on the RCE of 3/19/04 was about the impropriety of using the Chemical Engineer's Handbook and Somekh references for the recycling of the hydrophilic solvent. Appellant has now dropped that issue and has raised a new issue, not presented before: Appellant alleges that the secondary reference JP'699 does not teach "treating the adsorbent in the column with a solvent that is more hydrophilic than the hydrophilic phase to elute the essential oil from the adsorbent".

In response to the argument:

"THE COMBINED TEACHINGS OF THE PRIOR ART FAIL TO TEACH AN ESSENTIAL OIL-EXTRACTION PROCESS WHEREIN THE ESSENTIAL OIL IS ELUTED AFTER ADSORPTION IN THE ADSORPTION COLUMN"

Since multiple claims are argued as a single group, the response is directed at the independent claim 1 (37 CFR 41.67).

The claimed invention is a process of separating essential oils from materials by steam distillation or extraction to obtain a hydrophilic phase having essential oils in it, contacting this hydrophilic phase with a hydrophobic adsorption column, recycling the hydrophilic phase and eluting the essential oil adsorbed in the adsrobent column with a solvent more hydrophobic than the hydrophilic phase.

The claim was rejected using the primary reference JP'994 which teaches the process of separating essential oil by steam distillation. JP'994 is silent on the recycling of the hydrophilic phase (steam). Therefore, Chemical Engineer's handbook and an additional reference Somekh was used to show that recycling the hydrophilic phase is commonly used and is not patentable.

JP'994 also does not teach eluting the essential oil from the same column or vessel that was used for the adsorption step, but transfers the adsorbent to a different vessel to elute the essential oils. Therefore, JP'699 was used for its teaching of adsorption and subsequent elution of essential oil form a packed column.

First of all, it may be noted that the primary reference JP'994 teaches the known technology of a continuous, fixed-bed, packed column as problematic and difficult to work with (See paragraphs 0001 – 0007 for the discussion of the known packed columns and paragraph 0009 for the advantages of JP'994 apparatus). The reference to the fixed bed (activated carbon, silica, etc) in paragraph 0003 of page 4, ion exchange resin column in paragraph 0004 (page 4), and the shortcomings of the continuous flow adsorption apparatus in paragraph 0005 (page 4) are teachings of adsorption and elution from the same column in JP'994. Thus JP'994 can be considered as anticipating the 'adsorption and elution from the same column' issue. However, a secondary reference was deemed necessary with JP'994 to show that the adsorption and elution can be from the same column because the rejection is under 35 USC 103(a) as unpatentable because of the issue of recycle of the hydrophilic phase.

JP'699 teaches selective recovery of hop essential oil from wort boiler (see "gist" in page 3). The process is described in claimed in claim 1 and pages 3-5. The process taught is (1) cooling the wort boiler vapor discharge, (2) wet-process washing with a liquid, (3) adsorption (4) elution/recovery. (see middle of page 4). The adsorption step and the elution step are described in page 5 as:

> "... directed to an adsorption apparatus packed with a suitable adsorbent in order to adsorb the hop essential oil",
>
> and
>
> "The adsorbent having adsorbed the hop essential oil is brought unto contact with a solvent ...in order to elute the hop essential oil" .

There is no teaching in there that the elution step takes place elsewhere. There is also no teaching that the elution step does not or cannot take place within the adsorption column itself. At least there is an implied teaching that the process takes place in the same column. In fact, one of ordinary skill in the adsorption – elution – chromatography art would only consider the adsorption and elution steps as taking place in the same column in this teaching, unlike in the JP-994 reference wherein there is specific teaching that adsorption and elution take place in separate locations as an improvement over the known art of adsorption and elution from the same column.

The following definition of column chromatography was extracted form the internet [http://www.answers.com/topic/chromatography] as evidence that one of ordinary skill in the art would consider the adsorption and extraction as taking place in the same column:

Column Chromatography

In column chromatography the adsorbant is packed into a column and a solution of the mixture is added at the top. An appropriate solvent is passed through the column, washing, or eluting, the compounds down the column. A polar substance that is adsorbed very tightly to the surface will be efficiently retarded by the column, while a nonpolar substance will elute (dissolve in the solvent) very rapidly. By varying the nature of the solid adsorbant and the eluting solvent, a wide variety of resolutions, even of very similar substances, can be carried out.

JP'699 teaches the selective recovery of hop essential oil by having a step of washing the vapors (with water, hypochlorite solution, etc) before adsorption. The examples in JP-699 are directed at quantitative and qualitative comparison of the processes with and without the washing step, and the results are shown as gram of oil /Kg of carbon in the examples, and in Table 1 and in the gas chromatograms. Appellants are correct in their argument that, in the examples, only a portion of the activated carbon was taken out of the adsorption column for extraction with dichloromethane. However, it would be obvious to one of ordinary skill that the examples use small quantities of the adsorbed carbon for the express purpose of quantitative analysis, ie., extraction and weighing to determine the grams of oil adsorbed per Kg of carbon, to show the effect of the washing step (the g/Kg value differs for different washing step and is highest when there is no washing). One has to

take a small quantity of carbon out, wash and then weigh to determine this value. Taking out the entire column after the eluting step and then weighing would be imprecise and rather impractical.

Appellant ignores the general teaching and relies on the examples to allege that the elution step takes place at a different location than the adsorption column. However, examples and teaching of preferred embodiments would not negate the general teaching of the reference. Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). "A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." In re Gurley, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994) (The invention was directed to an epoxy impregnated fiber-reinforced printed circuit material. The applied prior art reference taught a printed circuit material similar to that of the claims but impregnated with polyester-imide resin instead of epoxy. The reference, however, disclosed that epoxy was known for this use, but that epoxy impregnated circuit boards have "relatively acceptable dimensional stability" and "some degree of flexibility," but are inferior to circuit boards impregnated with polyester-imide resins. The court upheld the rejection concluding that applicant's argument that the reference teaches away from using epoxy was insufficient to overcome the rejection since "Gurley asserted no discovery beyond what was known in the art." 27 F.3d at 554, 31 USPQ2d at 1132.).

Further evidence of non-patentability is a comparison of the Appellant's claim language with that of the JP'699 reference. Step (e) of Appellant's claim 1 recites:

"treating the adsorbent in the column with a solvent that is more hydrophobic than the hydrophilic phase to elute the essential oil from the adsorbent",

which is what is claimed by the JP-699 reference in claim 1 step D (page 2):

"a step wherein the adsorbent having adsorbed the hop essential oil is treated with a solvent for the hop essential oil in order to elute the hop essential oil".

In summary, appellant has decided to drop the issue of recycling the hydrophilic solvent (which was their issue in contention before) in the brief and raises the new issue that the combination of JP'994 and JP'669 does not teach adsorption and elution from the same column. In response, it is shown that (1) primary reference JP'994 teaches the separation of the adsorption and desorption in separate vessels as an improvement over doing adsorption and elution from the came column, (2) secondary reference JP'669 teaches adsorption and elution from the same column, and (3) the specific step in the claims of the appellant and that of the JP'669 are similar, thereby showing a prima facie case of obviousness.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Patent Examiner

March 31, 2005

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